

WCF931M
Passive Data
2024/09/26

Test Condition

- Test Condition

* WCF931M Metal Antenna and Chip Antenna

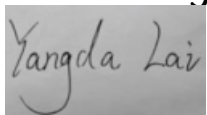
- Test Chamber: Aplustech OTA Chamber

(Address: R&D Building No.9, Main Park, Taohuayuan Science & Technology Innovation Park, Shenzhen, China)

- Network Analyzer : Return Loss

- 3D Passive Chamber : Gain and Efficiency

- Measured by Yangda Lai 2024/09/26



- Test Environment please refer to Antenna Appendix A

- Test procedure

1. Maintain the test ambient temperature of 23 C, the instrument is powered on and preheated for more than 30 minutes;

2. Turn on the darkroom power supply, connect the test cable, and set up the sample according to the standard;

3. Outline sets the test content objectives and conducts calibration tests;

4. Run the EMQuest OTA software, the test is complete, export the corresponding test diagram and test data, and save to the corresponding directory

Antenna Gain Measurement Procedure and Software

OTA measurement system

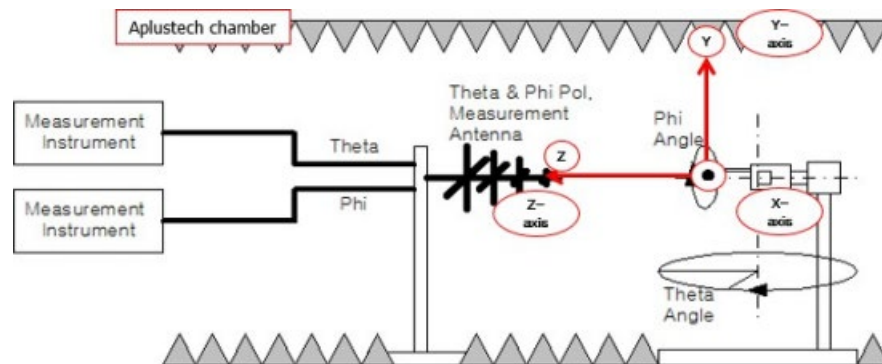
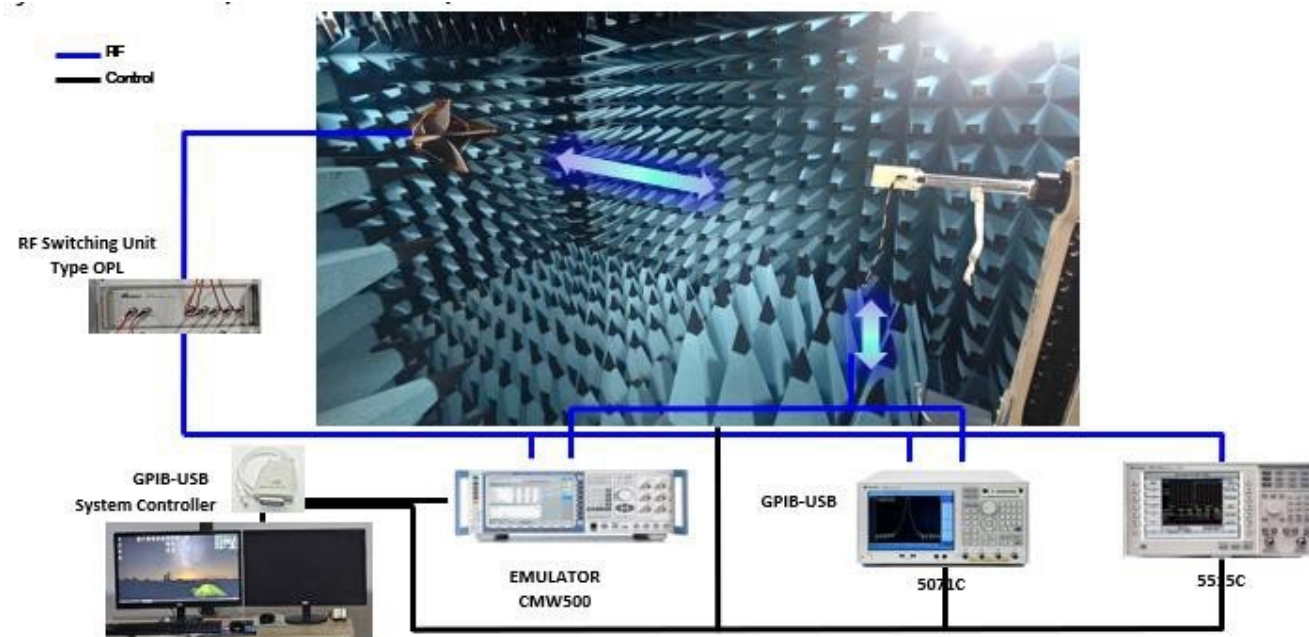
1. Test Frequency : Support 400 MHz to 7.5 GHz
2. Chamber Size: 4m x 2.5m x 2.5m

Support

3. LTE Support ALL Band (FDD/TDD)
4. CDMA,GSM,WCDMA Support ALL Band
5. Passive Efficiency Measurement (400 MHz ~ 7.5GHz)

Measurement specifications

6. Test Plan for RF Performance Evaluation for LTE Mobile
7. Converged Devices
8. Test Plan for Wireless Device Over-the-Air Performance



Great Circle Cut Method



Measuring Instruments

Item	Measuring Instruments	Latest Calibration Schedule
1	OTA Chamber	2024/04/01
2	Network Analyzer Keysight 5071c	2024/07/18

Electrical Characteristics

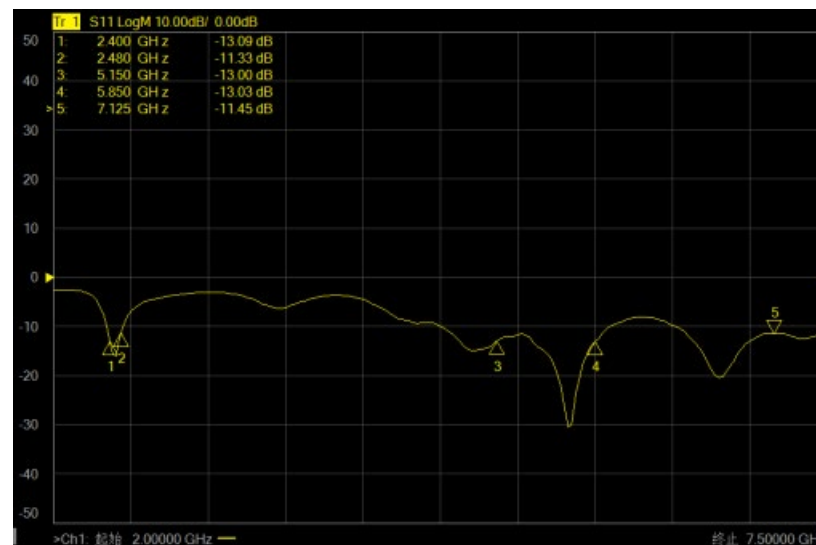
Item	Specification ANT1		Specification ANT2		Specification ANTO
Antenna Type	Metal Antenna		Metal Antenna		Chip Antenna
Central Frequency	5550MHz	6525MHz	5550MHz	6525MHz	2440MHz
Band Width	700MHz	1200MHz	700MHz	1200MHz	80MHz
Peak Gain	0.98dBi	0.80dBi	1.78dBi	1.42dBi	-3.61dBi
Return Loss	<-7dB		<-10dB		<-7dB
Polarization	Linear		Linear		Linear
Azimuth Beam width	Omni-directional		Omni-directional		Omni-directional
Impedance	50Ω		50Ω		50Ω
Dimension	11*5*2mm		12.5*5*2mm		10*3.5*0.55mm

Passive test-Return Loss



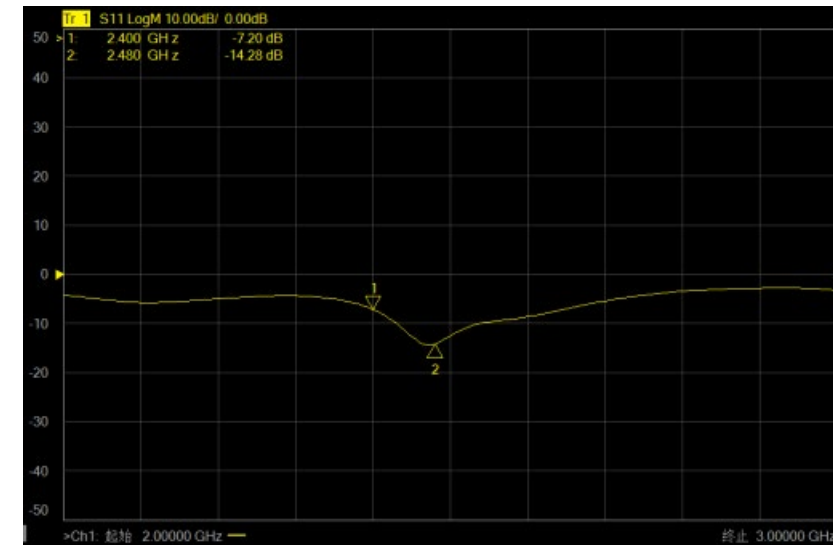
ANT1

Refer to Antenna Appendix A



ANT2

Refer to Antenna Appendix A



ANT0

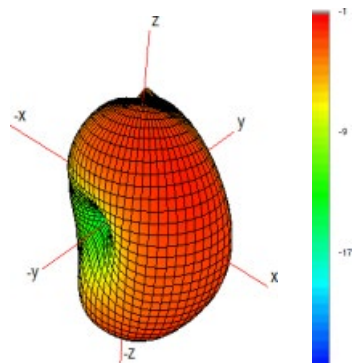
Refer to Antenna Appendix A

ANT1 Passive Test-Antenna 3D Gain

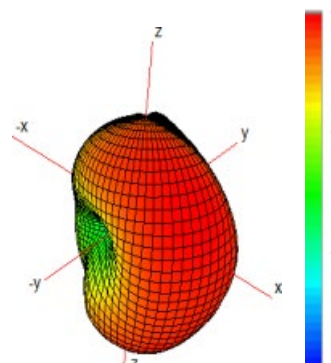
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
5150MHz	44.41 %	-9.11 dBi	-4.88 dBi	-3.53 dBi	-1.15 dBi	0.98 dBi	0.98 dBi
5250MHz	45.59 %	-8.80 dBi	-4.86 dBi	-3.41 dBi	-1.27 dBi	0.78 dBi	0.78 dBi
5350MHz	43.35 %	-8.90 dBi	-5.13 dBi	-3.63 dBi	-1.66 dBi	0.49 dBi	0.49 dBi
5450MHz	44.18 %	-8.65 dBi	-5.11 dBi	-3.55 dBi	-1.62 dBi	0.33 dBi	0.33 dBi
5550MHz	41.39 %	-8.86 dBi	-5.51 dBi	-3.83 dBi	-1.87 dBi	-0.17 dBi	0.08 dBi
5650MHz	40.99 %	-9.06 dBi	-5.48 dBi	-3.87 dBi	-1.91 dBi	-0.20 dBi	0.04 dBi
5750MHz	36.44 %	-9.64 dBi	-6.02 dBi	-4.38 dBi	-1.89 dBi	-0.79 dBi	-0.35 dBi
5850MHz	33.60 %	-10.19 dBi	-6.26 dBi	-4.74 dBi	-2.98 dBi	-0.68 dBi	-0.24 dBi
5925MHz	41.28 %	-9.96 dBi	-6.01 dBi	-3.84 dBi	-2.18 dBi	-0.65 dBi	-0.15 dBi
6075MHz	43.11 %	-9.50 dBi	-5.84 dBi	-3.65 dBi	-1.96 dBi	-0.75 dBi	-0.17 dBi
6225MHz	42.72 %	-9.31 dBi	-5.64 dBi	-3.69 dBi	-0.70 dBi	-0.25 dBi	0.80 dBi
6375MHz	43.40 %	-9.23 dBi	-5.24 dBi	-3.62 dBi	-0.63 dBi	0.39 dBi	0.63 dBi
6525MHz	39.93 %	-9.66 dBi	-5.58 dBi	-3.99 dBi	-0.97 dBi	0.07 dBi	0.46 dBi
6675MHz	36.60 %	-10.50 dBi	-6.16 dBi	-4.37 dBi	-1.49 dBi	-0.27 dBi	0.05 dBi
6825MHz	33.42 %	-11.45 dBi	-6.78 dBi	-4.76 dBi	-2.78 dBi	-0.51 dBi	0.00 dBi
6975MHz	33.19 %	-12.56 dBi	-7.99 dBi	-4.79 dBi	-3.74 dBi	-1.79 dBi	-1.29 dBi
7125MHz	33.19 %	-12.52 dBi	-8.30 dBi	-4.79 dBi	-3.94 dBi	-1.84 dBi	-1.34 dBi

ANT1 Passive Test-Antenna 3D Radiation Pattern

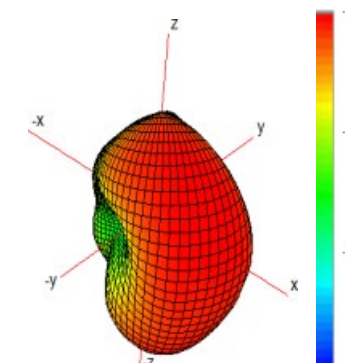
2400MHz



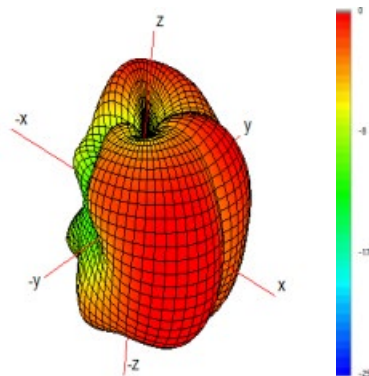
2440MHz



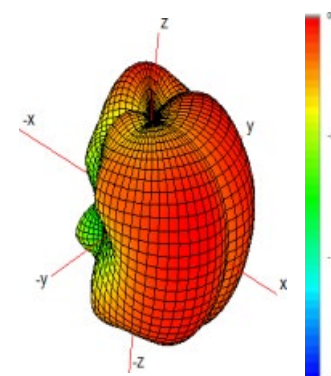
2480MHz



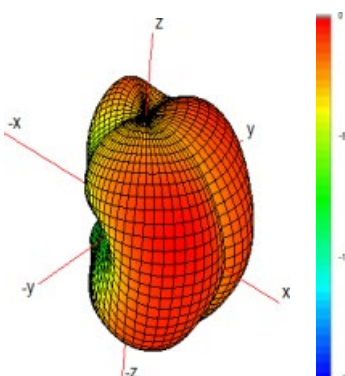
5150MHz



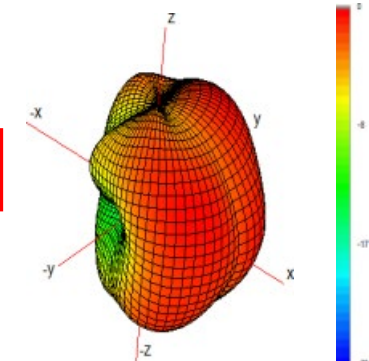
5550MHz



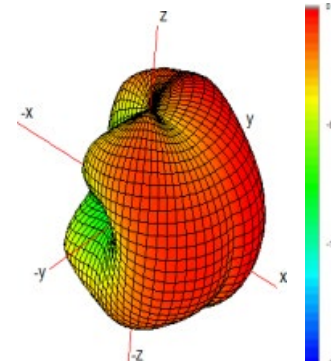
5850MHz



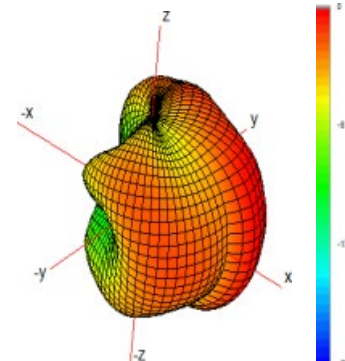
5925MHz



6525MHz



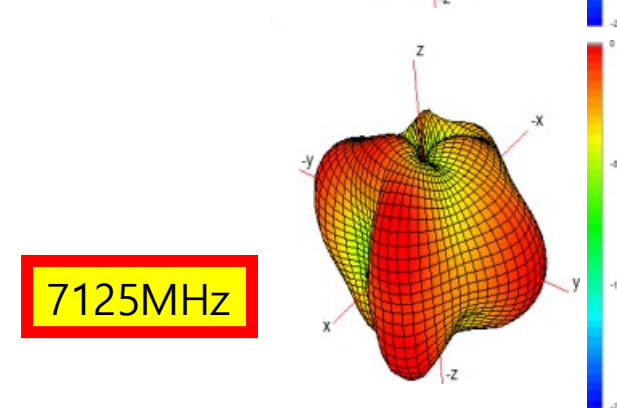
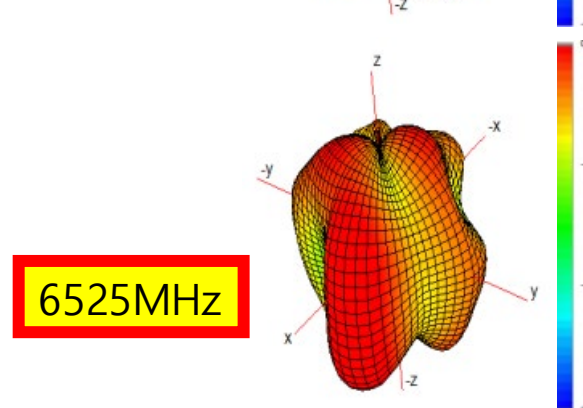
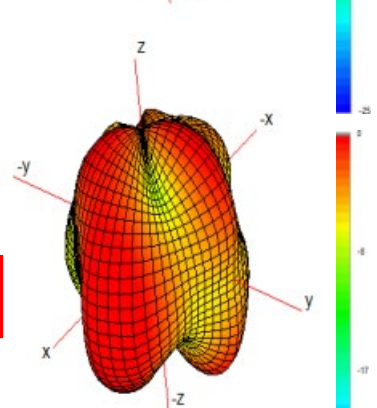
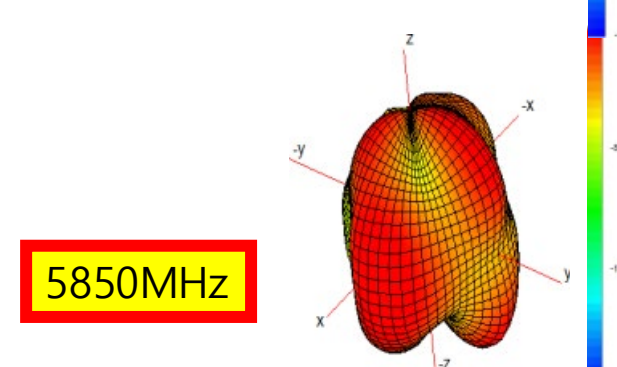
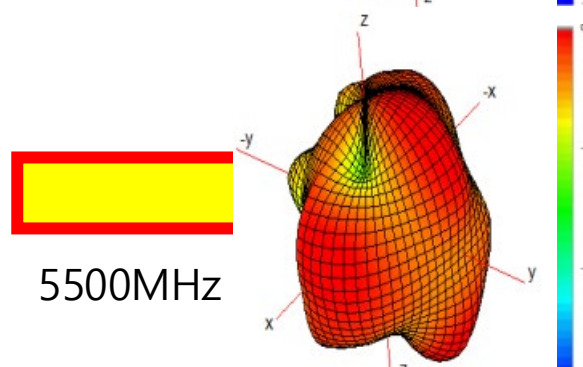
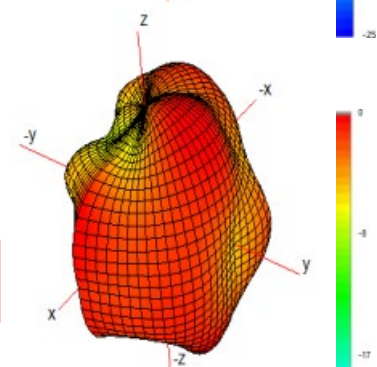
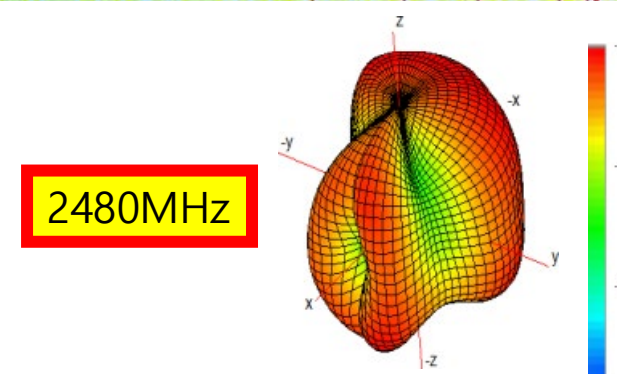
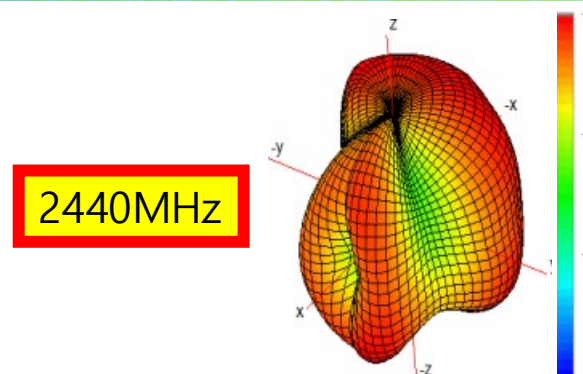
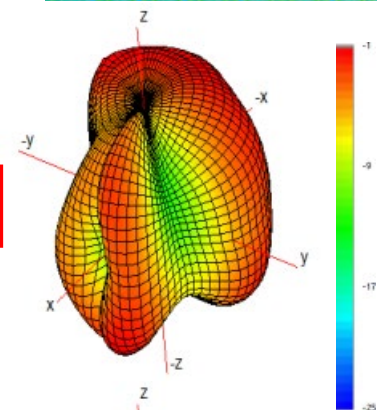
7125MHz



ANT2 Passive Test-Antenna 3D Gain

Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
5150MHz	41.70 %	-9.44 dBi	-4.89 dBi	-3.80 dBi	-2.14 dBi	0.31 dBi	0.54 dBi
5250MHz	43.94 %	-9.38 dBi	-4.88 dBi	-3.57 dBi	-1.96 dBi	0.27 dBi	0.69 dBi
5350MHz	43.15 %	-9.48 dBi	-5.09 dBi	-3.65 dBi	-2.32 dBi	-0.07 dBi	0.97 dBi
5450MHz	43.56 %	-9.33 dBi	-5.17 dBi	-3.61 dBi	-1.74 dBi	-0.53 dBi	1.28 dBi
5550MHz	44.57 %	-9.34 dBi	-5.06 dBi	-3.51 dBi	-1.65 dBi	-0.04 dBi	1.78 dBi
5650MHz	47.74 %	-9.06 dBi	-4.88 dBi	-3.21 dBi	-1.31 dBi	0.76 dBi	1.76 dBi
5750MHz	45.91 %	-9.43 dBi	-5.08 dBi	-3.38 dBi	-1.69 dBi	0.76 dBi	1.56 dBi
5850MHz	43.53 %	-9.78 dBi	-5.42 dBi	-3.61 dBi	-1.78 dBi	0.80 dBi	0.95 dBi
5925MHz	43.64 %	-10.05 dBi	-5.42 dBi	-3.60 dBi	-2.16 dBi	0.92 dBi	0.94 dBi
6075MHz	41.46 %	-9.99 dBi	-5.72 dBi	-3.82 dBi	-2.67 dBi	0.85 dBi	0.89 dBi
6225MHz	39.65 %	-10.02 dBi	-5.91 dBi	-4.02 dBi	-2.52 dBi	0.55 dBi	0.60 dBi
6375MHz	42.67 %	-9.66 dBi	-5.52 dBi	-3.70 dBi	-1.87 dBi	0.96 dBi	0.98 dBi
6525MHz	42.76 %	-9.55 dBi	-5.47 dBi	-3.69 dBi	-1.71 dBi	1.00 dBi	1.06 dBi
6675MHz	43.32 %	-9.50 dBi	-5.23 dBi	-3.63 dBi	-2.59 dBi	1.31 dBi	1.42 dBi
6825MHz	44.36 %	-9.71 dBi	-5.04 dBi	-3.53 dBi	-2.84 dBi	1.27 dBi	1.38 dBi
6975MHz	36.13 %	-10.63 dBi	-6.00 dBi	-4.42 dBi	-3.49 dBi	-0.24 dBi	-0.10 dBi
7125MHz	33.57 %	-10.67 dBi	-6.28 dBi	-4.74 dBi	-3.28 dBi	-1.35 dBi	-0.98 dBi

ANT2 Passive Test-Antenna 3D Radiation Pattern



ANTO Passive Test-Antenna 3D Gain

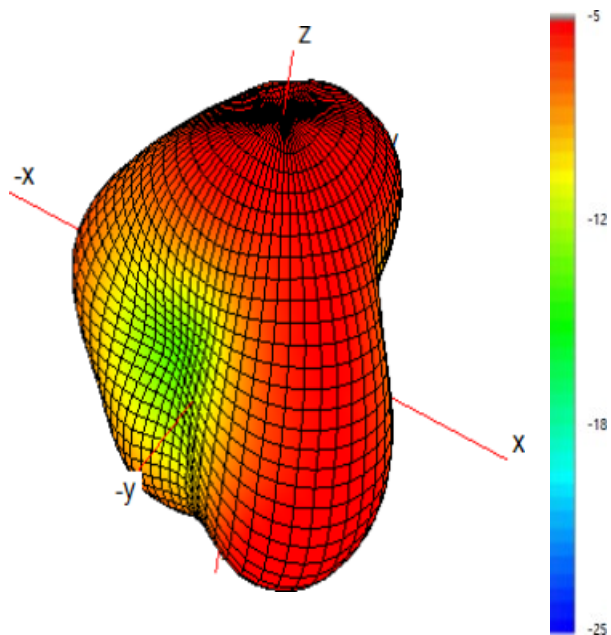
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400MHz	19.95 %	-14.03 dBi	-11.46 dBi	-7.00 dBi	-6.33 dBi	-6.19 dBi	-5.84 dBi
2410MHz	21.53 %	-13.28 dBi	-10.86 dBi	-6.67 dBi	-5.48 dBi	-5.70 dBi	-5.33 dBi
2420MHz	23.01 %	-12.64 dBi	-10.33 dBi	-6.38 dBi	-5.01 dBi	-5.32 dBi	-4.91 dBi
2430MHz	24.04 %	-12.12 dBi	-9.87 dBi	-6.19 dBi	-4.48 dBi	-4.96 dBi	-4.35 dBi
2440MHz	24.43 %	-11.75 dBi	-9.51 dBi	-6.12 dBi	-4.11 dBi	-4.77 dBi	-3.96 dBi
2450MHz	24.27 %	-11.57 dBi	-9.37 dBi	-6.15 dBi	-3.88 dBi	-4.84 dBi	-3.74 dBi
2460MHz	23.55 %	-11.45 dBi	-9.25 dBi	-6.28 dBi	-3.75 dBi	-4.87 dBi	-3.61 dBi
2470MHz	22.91 %	-11.44 dBi	-9.24 dBi	-6.40 dBi	-3.82 dBi	-4.70 dBi	-3.67 dBi
2480MHz	22.08 %	-11.55 dBi	-9.34 dBi	-6.56 dBi	-4.13 dBi	-4.64 dBi	-3.90 dBi

ANTO Passive Test-Antenna 3D Radiation Pattern

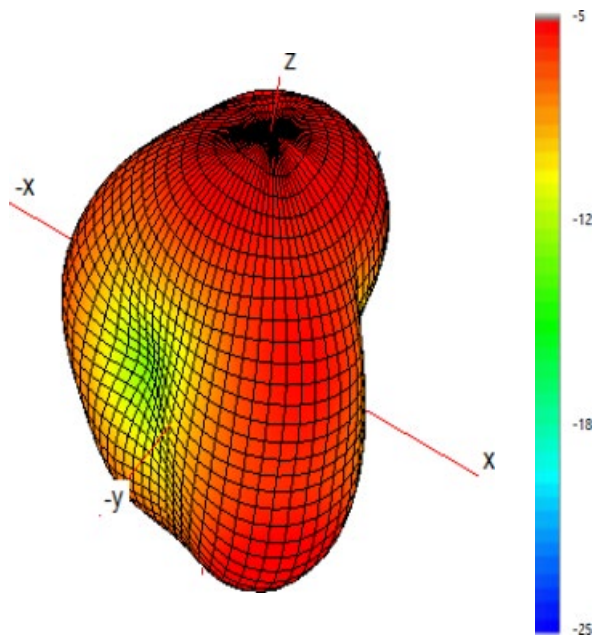


Shenzhen Hanyang Antenna Co., Ltd.
深圳汉阳天线设计有限公司

2400MHz



2440MHz



2480MHz

